

## The ethics of animal experimentation

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*Animal experimentation arouses great emotion in many people, perhaps more especially in Britain, and this has increased as more sophisticated medical and non-medical animal experiments are demanded by modern research. The Cruelty to Animals Act of 1876 is the only legal regulation of experiments in animals, and many of its clauses are ambiguous. So in 1963 a committee of enquiry – the Littlewood Committee – was set up. Dr Lane-Petter examines the emotional and factual background to the enquiry, and discusses in an ethical context the usefulness and positive advantages of animal experiments compared with those of possible substitutes and in some detail three of the questions left unanswered by the Littlewood Committee.*

The Cruelty to Animals Act of 1876 seeks to regulate the use of animals for scientific experiments. It applies only to the use of vertebrate animals in experiments 'calculated to cause pain'; and none of these terms is sufficiently defined in the Act. The Act followed the recommendation of a royal commission set up in 1875, and its administration takes account of further recommendations of a second royal commission set up in 1906 and reporting in 1912, and of a number of opinions expressed by the law officers of the crown and others from time to time. Many of the clauses of the Act are ambiguous, but there has never been a prosecution and so no case law exists.

In 1963 the Home Office, which administers the Act, appointed a departmental committee of enquiry, under the chairmanship of Sir Sydney Littlewood, 'to consider the present control over experiments on living animals, and to consider whether, and if so what, changes are desirable in the law and its administration'. The Littlewood Committee reported in 1965, making 83 recommendations, 49 of which would require new legislation for their implementation (Report of the Departmental Committee in Experiments on Animals, 1965). One member of the Committee, Mrs Joyce Butler, made a terminal comment:

'I have signed this Report, accepting – with my colleagues – that any attempt to answer the three major questions of which mention is made in paragraph 237 lies outside our terms of reference. I am convinced, however, that unless or until answers are found to these questions there will remain room for doubt about the need and justifi-

cation for the use of animals for laboratory purposes.'

The three questions set out in paragraph 237 will be considered below. Despite being outside the terms of reference of the Committee, they are nevertheless relevant and carry a heavy ethical implication, but it is not possible to answer them without appeal to those very people whose actions would be controlled by the answers. This is a common ethical dilemma and imposes on such people the duty of considering it and trying to resolve it. It is not susceptible to abstract ethical treatment, because the practical consequences of doing, or refraining from doing, experiments on animals are far reaching and have to be understood in some detail by those who would pronounce judgment.

### The dominance of man

It is an inescapable fact that *Homo sapiens* has gained a position of dominance over almost every other form of life on this planet. His very existence, especially in the numbers he today inflicts on the world, depends on the exercise of that dominance: if this exercise is without restraint, without long-term consideration, he will certainly damage or destroy his habitat, with catastrophic consequences at the biological level.

Is there an analogy here concerning ethical considerations? If man can pollute and destroy the land that supports him, can he commit comparable outrages by abusing his dominance in the use he makes of animals for his own purposes, especially in the present context, for scientific experimentation? Most people would probably agree that this is possible. If man is motivated to discover new knowledge, subscribing to the severe intellectual discipline of the scientist, but at the same time ignores the existence of moral principles that may moderate his pursuit, he may run the risk of vitiating his originally altruistic motivation. The question is, therefore, not whether experimentation should recognize restraints, but what restraints should be recognized.

### The usefulness of animal experiments

The usefulness of animal experiments to man, and to other animals, has been challenged frequently,

but all reasonable examination of the claim places such usefulness beyond any possibility of doubt. This is the conclusion of both royal commissions and of the Littlewood Committee, and it is supported by such a volume of evidence as to be beyond dispute. This is not to say that all animal experiments have useful results and are therefore pragmatically justifiable; but the method of animal experimentation, on the whole, has been rewarded by the conquest of many diseases and the consequent benefits. Animals experiments are the bricks and mortar, in some cases the very foundations, of modern medical science, and we pay poor tribute to the animals and those who have used them profitably if we demur from this conclusion. But is it all profit? There are more diabetics alive today than there were 50 years ago because of insulin, and most of them live useful and nearly normal lives. There are more animals today used in laboratories for experiments than there were 50 or 100 years ago, and some of these experiments cause pain to the animals: all of them cause distress to some people who disapprove of animal experiments and want to see them severely limited or even abolished. We cannot deny the diabetic his prolonged life but nor can we ignore the distress of those who genuinely feel it wrong to exploit animals. We have to set this distress against the benefit to the diabetic, and this epitomizes the ethical dilemma.

Not all animal experiments are primarily directed towards solving urgent medical problems. It is true that many animals are used in cancer research, in clinical investigation of disease, in controlling or assaying medicines, as well as in medical research. But some research is not medically orientated, although in time its discoveries may have medical usefulness; and many animals are used to investigate the safety or otherwise of products quite outside the medical field, such as industrial materials, household products, food additives, packaging materials, cosmetics and all the countless substances, both naturally occurring and man made, in our environment. Such investigations could be called 'medical' if they were regarded as an essential part of environmental health or preventive medicine, which many of them undoubtedly are, but the difficulty of trying to distinguish between medical and non-medical purposes is apparent. This difficulty is not always faced by those who criticize animal experiments.

### **The positive advantages of animal experiments**

For the admitted usefulness of most animal experiments the animals may pay a price in suffering and some people in terms of distress. Much the same equation may of course apply to the use of animals for other purposes, such as food; farm animal husbandry is sometimes just as objectionable from

the animal's, or the animal lover's, point of view as animal experimentation. But there is a positive advantage in man exercising his dominance in dealing with animals in this as in most other ways that bring him into intimate contact with animals. Whether in the laboratory, on the farm, in the zoo or the circus, hunting with gun or camera, harpoon or net, the people thus involved have to study and understand their subject. Understanding, among people of goodwill, brings respect, and respect is likely to be followed by considerate treatment and a general enrichment of life for both man and animal.

For many people intimate association with animals is an essential part of their lives, without which living would be greatly impoverished; just as for others life without trees, or flowers, or mountains, or the sea would be scarcely worth living. This is not the *theoanthropos*, the demi-god, syndrome. It is part of the human condition, which has developed from its beginning in more or less close association with animals, wild and domesticated, as with other aspects of the natural world. For many people such contact is a deep-seated need, and it leads them willingly to undertake unpleasant or dangerous tasks, such as cleaning out byres or cages, handling or training dangerous animals, exposing themselves to discomfort or sharing their limited food resources with their animals. These are some of the ways of fulfilling the obligation which human dominance imposes, of giving practical expression to man's goodwill.

This is not a spurious argument. On the contrary, it is an inevitable consequence of man's biological dominance, and the key word is goodwill. Have we here then the root of an absolute ethical principle (that would define the term goodwill), or is it still a matter of biological adaptiveness: that is, to exercise what is normally regarded as goodwill is, in the long run, adaptive or beneficial to our species? Different people will incline to the absolute explanation, or to the biological one, according to their point of view, but either way we are placed under an obligation to exercise our dominance with restraint and a sense of responsibility to treat our animals humanely. It can be simply expressed thus: all experiments (or for that matter any other form of exploitation of animals) must have a sufficient justification for the infliction of pain or distress, and the infliction of suffering beyond a certain limit cannot be justified at all. The interpretation of this principle is related to currently accepted norms of human conduct, and will vary from age to age and between different communities. It is thus essential that the whole of society, not just the scientific world, be sufficiently informed and aware of what is being done, so that they can make judgments in accordance with the currently accepted norms. The scientist has a duty to see that society is so informed, and to take account of society's judgments.

### The unanswered questions

The Littlewood Committee considered that the three questions referred to by Mrs Butler were outside their terms of reference, as was any attempt to evaluate or direct biological and scientific research, to develop a grand strategy, to select priorities or to evaluate promise of useful results. But they did agree that public opinion and ethical considerations could not be ignored, and that an informed public and an awareness of public opinion on the part of the experimenter were to be encouraged (para 237).

The Littlewood report went on to attribute to legislation three aims in the field of animal welfare, namely, to prevent objectionable activities, to encourage humane practices and to provide for the accountability to the public of all concerned (para 238), and they developed this thesis in some detail in subsequent paragraphs.

#### WHO COULD PREDICT SATISFACTORY ALTERNATIVES TO BIOLOGICAL TESTING?

The first of the three unanswered questions was, Who can say whether, if certain biological tests were forbidden, satisfactory chemical or other methods of testing would not be developed? One implication behind this question is that 'testing' is a simple matter giving clear-cut answers, and that test tubes would be likely to serve the purpose equally well. But animals are not test tubes (although they have at times been misleadingly compared with them); they are very complex systems, every part of which may be involved in the response to an experimental procedure. Whole-body responses can only come from whole bodies, and thus neither test tubes, nor organ preparations, nor tissue cultures, nor microbial cultures, nor any other suggested alternatives are possible substitutes for experiments in which whole-body responses are being studied. It follows from this that, where non-sentient systems intended to replace whole-animal experiments are developed – as they constantly are – they have to be validated by comparison with the whole animal. This may be simple and economical in such tests as the assay of vitamins, many of which formerly used whole animals but which now employ *in-vitro* substitutes; but the investigations of drug action, of immunological reactions, of nutritional physiology and pathology, of carcinogenesis and teratogenesis, of toxicity, of behaviour and of countless other life processes are not simple affairs, and only whole animals can show how whole animals will respond. It is true that once the mechanism of such responses has been elucidated, *in-vitro* tests may be devised that show a faithful correspondence with a relevant part of the *in-vivo* condition, and in present conditions such substitution is constantly sought. But sometimes the price of validating a substitution may paradoxically use more animals than the original *in-vivo* test, which may itself be more or less free

from pain or distress to the animal, and so the substitution may be pointless.

Thus, the idea that alternatives exist, and more effort should be made to discover them, is a misconception, for alternatives are not the same as substitutes. The answer to Littlewood's first, unanswered question is that only the experimenter, or his close colleagues who understand intimately the work he is engaged in, can suggest, develop or evaluate substitutes to experiments on the whole animal. Society can lay down principles but the scientist alone can estimate and explain the consequences of abiding by those principles, and this he has a compelling duty to do. If his estimate of the consequences also brings to light a conflict between the principles laid down by society and his own ethical convictions, he also has the right to challenge – but openly – society's principles, and to receive a fair hearing.

#### WHO WOULD BE RESPONSIBLE FOR ESTABLISHING WHETHER TECHNIQUES WERE DEVELOPING MEDICAL PRACTICE IN THE RIGHT DIRECTION?

The second of Littlewood's unanswered questions was, Who is responsible for establishing whether modern medical techniques, with their emphasis on immunology and drug therapy, both of which are inseparable from animal experimentation, are developing medical practice in the right direction? This is a loaded question. In medical science the emphasis today may be on immunology, but yesterday it was on microbiology and tomorrow it could be on biochemistry. In other words, salients in research change in nature, and it could be argued that there is a certain mutual exclusiveness between immunology and drug therapy. Moreover, other aspects of medical science also call for reference to the experimental animal. But if we leave out the middle part of this question, and ask who in the promotion of medical research are our pilots and whether they are qualified to guide us, some sort of answer can be given.

Research is sponsored by many bodies, all of which are more or less expert, but they are all engaged in something of a gamble. The student of form is probably more likely than the occasional punter to put his money on a winning horse, or the professional investor to make money on the Stock Exchange, but both can lose their money from time to time, while the punter may back a winner. Our society has thought fit to support research in various ways: by private individual benefaction, by privately financed but collectively managed funds by government-financed bodies (such as the research councils), by industry collectively or individually, by universities and in a few other ways. Society is reasonable in entrusting to expert sponsoring bodies the decisions about what research to support. Those responsible respectively for supporting and

for pursuing medical research – and there is some overlap of people between the two groups – are probably the best that society can choose, even if they are not infallible and may sometimes fail to support a promising outsider. But society should constantly question its choice of sponsors and indeed, if the Rothschild report is anything to go by, this is what it does.

The answer to Littlewood's second unanswered question is that we are all responsible, but we delegate our responsibility to those we think best able to make informed judgments, and these will inevitably include some with a vested interest in this or that method of seeking new knowledge. Those who think medical research is following the wrong path must give good reasons for pursuing a better course, and this they have until recently failed to do. However, there is today a considerable amount of money being given to medical research by organizations opposed in principle to animal experimentation, who believe that much more can be done than is being done in research by work not entailing the use of animals. This is a new development, and given the point of view sincerely held by its sponsors, it is more encouraging than unqualified condemnation of all kinds of animal experimentation. It is a test of faith in principles, and must be respected as such by those who may disagree with the thinking behind it.

#### WHO WOULD BE RESPONSIBLE FOR ETHICAL JUDGMENTS IN ANIMAL EXPERIMENTS?

The third unanswered question posed by the Littlewood Committee was, Who is to take responsibility for moral or ethical judgment in the use of animals for experimental purposes as such? Clearly, every thinking person, every person who may benefit directly or indirectly from animal experiments, must share the burden of responsibility, and this would be so even in an undemocratic society. Not one of us can shrug off matters of individual conscience such as this. It follows therefore that if we mistrust the competence of the experimenter to give a good answer to the first question, or of our sponsoring bodies to make good decisions about what sort of research and development to support, we have a right and duty to challenge the decisions that are made on our behalf. What the individual does not have the right to do is condemn, or refuse to listen to, those who have made moral or ethical judgments that differ from his own. A man might believe that he could solve the world's population problem by disseminating a (hypothetical) infection leading to vastly reduced fertility; but he would not have the right to go round the world spreading the infection among unsuspecting humanity. For one thing he could not be sure that some unknown side effect of this hypothetical infection might not be even

more catastrophic than overpopulation; for another, he would be breaking one of the first rules of society, which is to refrain from personal assault on one's fellows.

But this is to carry the argument to a meaningless extreme. The bounds of the ethical dilemma are, on the other hand, *carte blanche* for the investigator in his use of animals, and on the other hand attributing to animals a mystical persona that places them beyond the reach of practical use or exploitation. Somewhere between these two extremes we have to find a compromise, and having found it we have constantly to keep it up to date.

If we hurt animals, if we hurt the feelings of sensitive or even misguided people, or if we prevent the advance of beneficial knowledge through misplaced sensitivity, ignorance or plain wrong-headedness, we must answer for the consequences, which may be more serious than the benefit we claim for our actions. This is the essence of any ethical compromise, and animal experimentation is particularly resistant to acceptable compromise. It is a difficult subject to understand in all its aspects; it arouses emotions that are deeply rooted in human nature, emotions that may have all kinds of vivid overtones, some of them quite ugly; and both extreme points of view claim an overriding altruism in their support.

The Littlewood Committee was right in finding that 'animal experiment is a complex and highly specialized subject. It is also a moral and social problem . . . and one that does not exclusively concern the expert' (page 189). (The words omitted were 'of the first magnitude', which is surely an excessive claim.)

#### Conclusions

There are hopeful signs in this controversy today. More animals are used in laboratories than ever before, and in Britain and many other countries the conditions in which they are kept and used are better and more humane than in the past. Public knowledge of, and interest in, animal experimentation is growing. Scientists as a body have always had a conscience in this field, but if they had not the climate of opinion today would force it on them. Many of those who formerly opposed animal experimentation uncompromisingly today admit that medicine has benefited greatly in the past and may continue to do so in the future, and that not all animal experiments are painful or distressing. There are, fortunately for the health of society as a whole, many shades of opinion and a growing dialogue between nearly all of them. Bills come before Parliament in this and many other countries, recommendations come before the Council of Europe, regulations multiply faster than research funds, public awareness grows in the light of informed articles in magazines, broadcasts, debates, lectures,

meetings, discussions. Not all the information coming out in these ways is accurate or gives a true picture. Those who economize in the veracity of their statements are guilty of hubris, for truth is not to be distorted in order to score a debating point. But the whole subject is getting a prolonged public airing. In public debates it is noticeable that the old fashioned dog fight – for or against vivisection, *tout simple* – is giving way to true dialogue, the weighing of arguments and attempts to reconcile conflicting attitudes. This is the necessary precursor of an ethical code.

There are certain practical conclusions that may be drawn from this discussion. First, there is a need for a standing body to keep under constant review the circumstances in which experimental animals are kept and used, for what purposes and by whom. Such a body was proposed by the Littlewood Committee, who recommended a committee of 12, including four lay persons, to advise the Home Office, to take the initiative if it wished to consider any relevant matters, and to prepare an annual report. In 11 years the Home Office has failed to implement this, the one fundamental recommendation of all the 83 put forward in the report. (It is true that four lay persons have been added to the existing Advisory Committee, but this is not what Littlewood wanted.) Recommendation 71 (v) stated: 'This *reconstituted* advisory committee should be empowered *on its own initiative* to advise on matters relevant to the usage and care of laboratory animals' (my italics).

A second conclusion is that scientists whose work leads them to use animals should be encouraged to work out and observe a code of practice for such use. Such codes of practice do indeed exist in many laboratories in many countries, and are more or less faithfully observed. Codes of practice are not substitutes for ethical principles, but they do provide practical guidance to those who want to follow such principles but may not always be able to work out their detailed application to current experiments.

Many human activities having a considerable ethical content are today guided by codes of practice, and animal experimentation can only benefit from its own explicit guidelines.

Lastly, the person who proposes to use animal experiments in his work could with benefit ask himself three questions. Is the whole living animal the best experimental system, or would a non-sentient part of it, or an *in-vitro* substitute, serve as well? Secondly, if the whole animal is necessary, can all or most of contingent pain or distress be removed by suitable experimental design? Thirdly, is the number of animals to be used as low as experimental requirements permit? These are, in fact, the points made by Russell and Burch (1959) in *The Principles of Humane Experimental Technique* – the 'three Rs', replacement, refinement and reduction. To these three questions may be added

a fourth, namely, is the experiment of sufficient interest or importance to justify any discomfort or worse that it may cause to the animal?

For the experimenter this is the hardest question of all to answer, for unlike the others it is a matter of subjective judgment, and in difficult cases an independent view would seem indispensable. The Home Office inspectorate, guided by a competent advisory committee, can offer one type of independent judgment, but the views of immediate colleagues and peer groups should also be taken into account. If this is done, people of goodwill can feel assured that they are not supporting, consciously or by default, behaviour that could in any way be regarded as unethical.

## References

- Report of the Departmental Committee on Experiments on Animals (1965). Cmnd 2641, Her Majesty's Stationery Office, London.  
 Russell, W M S, and Burch, R L (1959). *The Principles of Humane Experimental Technique*, page 64 *et seq.* Methuen, London.

## Commentary

T W Hegarty and A N Rowan *Fund for the Replacement of Animals in Medical Experiments\**

The Fund for the Replacement of Animals in Medical Experiments (FRAME) is an organization whose aims are to promote methods of research which help to reduce or eliminate the need for laboratory animals. It is not our concern to dispute the ethics of animal experimentation and for this reason we do not propose to comment on a large part of Dr Lane-Petter's paper. FRAME is, rather, a promoter of the 'three rs' of Russell and Burch<sup>1</sup> – replacement, refinement and reduction, and from this standpoint we should like to expand the discussion in Dr Lane-Petter's paper on alternatives and substitutes for laboratory animals.

## Role of animals in medical and biological research

First, however, it may be useful to consider briefly the various roles that animals play in medical and biological research. Some are required for teaching and demonstration purposes and some for veterinary research, but the vast majority are used in basic research, for routine functions, or in research relating in some way to the human system. 'Basic research' has been uncharitably described as any work for which one cannot, at present, think of a use. More charitably it describes work that is carried out to 'further our knowledge'. 'Routine functions' include such areas as serum, hormone, vaccine or antibody production, the bioassay of the

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concentration or activity of biologically active substances, and the maintenance and testing of disease organisms. 'Research relating to the human system' includes the testing of drugs and chemicals or the investigation of human diseases and disorders in which the animal is being used in some way as a model for man. Some alternatives to animals may seem obvious and trivial yet can be easily overlooked. Plant or bacterial tissue may be just as suitable as animal material for the study of basic cell functions. Animal tissue may be obtainable from slaughter houses rather than from more easily available laboratory animals. Human tissues or blood may be just as acceptable as those obtained from animals.

In the detection or production of particular substances there is no inherent merit in the use of live animals and these are replaced as new methods become available, although the pace of developing and introducing replacements could be increased. Well established alternatives include the use of microorganisms in nutritional assays; the development of human tissue cultures for vaccine production; and the detection of some disease organisms, eg, tubercle bacilli, in culture systems which previously used animals. Useful advances would come from the establishment of tissue systems capable of producing antibodies for immunological work and hormones or other biologically active substances.

In toxicology, in work on fundamental aspects of human function, and in much of the work on human diseases, animals are used as models of the human system. Lane-Petter stresses the importance of the whole-body response, suggesting that the 'investigation of drug action, of immunological reactions, of nutritional physiology and pathology, of carcinogenesis and teratogenesis, of toxicity, of behaviour and of countless other life processes are not simple affairs, and only whole animals can show how whole animals will respond'. In addition, he states that 'only the experimenter, or his close colleagues who understand intimately the work he is engaged in, can suggest, develop or evaluate substitutes to experiments on the whole animal'.

This argument sadly epitomizes the innate conservatism (and even elitism) of some scientists. But it fails because it does not take account of the fact that the laboratory animal is itself only a model of the human system, and that it can be a pretty poor model at that. Therefore, when arguing the advantages of an *in-vitro* system relative to a laboratory animal method, one is not comparing a substitute with an absolute standard which happens to have some possible ethical objections. Instead, it is a comparison of one compromise with another, and both are approximations to man.

### Other test systems

Animal tests represent one approach to the problems of investigating the properties of the human system.

Other approaches exist or are being developed. The fixation that animal tests are necessarily best, or most meaningful, is a major hindrance to the adoption of more efficient methods. This is best exemplified by important developments in a field that has traditionally been claimed as a preserve for the 'whole-organism response' – that of toxicology and in particular carcinogenesis. A major advance in this field has been the introduction of bacterial and cell systems which detect carcinogenicity through mutagenicity.

So far, the most successful of these systems has been developed by McCann and Ames at Berkeley University, California, using mutants of *Salmonella typhimurium*.<sup>2</sup> The success of the test is dependent on the existence of a relationship that mutagens are carcinogens, and in a recent paper McCann describes extensive work which suggests that this supposition is largely justified.<sup>3</sup> In a survey of 300 chemicals, 156 out of 174 known carcinogens were detected in the assay while few non-carcinogens showed any sign of mutagenicity. The test system takes some account of mammalian metabolism by including the microsomal fraction of liver homogenate to produce putative metabolites *in vitro*. This simple and effective test (which has already been used to detect potential carcinogens in common use) is ideal for use as an initial screening procedure before whole-animal tests are involved. Chemicals reacting positively in the *Salmonella* test could be discarded unless they had some potential medical value; chemicals reacting negatively could proceed to the next phase of testing which could include animal tests. A combination of tests could be considerably more relevant than animal tests alone, even in this field of 'whole-body response', yet animal numbers could well be substantially reduced.

This example has been described at some length because it describes the potential for a system currently under development, and it is the potential for alternatives that FRAME is intent on publicizing whilst being aware of their limitations. Unlike Dr Lane-Petter, we believe that an increase in effort would be rewarded by practical results. It is often fashionable to underestimate the value of new methods, yet on occasion reputable scientists are prepared to speculate. For instance Keay, of Washington University, has said of tissue cultures that 'with improved technology and reduction in production costs many other applications may be feasible; the production of hormones *in vitro*, the production of specific antibodies, the large-scale production of animal (human) enzymes for replacement therapy, enzyme immobilization for various applications, such as chemical conversion of expensive intermediates as is currently carried out with steroids using microbial systems, and possible production of pseudotissues by growth of cells in a three-dimensional inert matrix for application in organ replacements'.<sup>4</sup>

### Practical obstacles to alternative systems

If one can accept that alternatives do have potential, even in unlikely fields of work, and that further effort in their development would be rewarded, there are still important practical problems to their adoption. First the scientist must become aware of their existence, second he must be technically skilled to carry them out and third he must be provided with adequate facilities. FRAME has set out to alleviate the first problem by publishing a journal of abstracts on alternatives (*ATLA Abstracts*). No computer information retrieval system has yet been shown to be able to operate efficiently in this field (papers are not key worded for their 'replacement' potential) and scanning by individual abstractors is essential.

The second problem arises largely from the concentration on animal-using technology in education. In two fields, tissue culture and computer simulation, we have considerable evidence that a failure to train students in techniques does have a lasting effect on attitudes towards their later use. Simulation programmes, for instance, have considerable scope in teaching as well as in research for reducing the need for animals, yet systems analysis, modelling and programming (as distinct from data analysis) are often not taught or only sketchily taught to biologists. The jargon of the computer programmer may even be sufficient to deter a potential user.

The third problem arises out of the present concentration of biomedical science on animal technology. For example, most laboratories have easy access to an animal house, and more important, the researcher only pays the production costs of the animal (the overheads for the animal house are borne by the department). However, the research worker who uses tissue culture has to pay all the costs (except for the provision of a room) out of his own grant. Because of these financial constraints and problems of access, it is hardly surprising that the possibilities of tissue culture techniques are not fully exploited.

Thus, consideration of alternatives cannot be oversimplified. It would be an attractive thesis that any research worker would use an *in-vitro* method if he did not have to use an animal, but how is he to know, and can he use it? Ignorance may be bliss if it conceals options that involve ethical or moral choices. FRAME hopes that information will help to dispel the ignorance and that education will enable the right decision to be made.

### References

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- <sup>2</sup>McCann, J, and Ames, B N A simple method for detecting environmental carcinogens as mutagens. *Annals of the New York Academy of Science* (in press).
- <sup>3</sup>McCann, J, Choi, E, Yamasaki, E, and Ames, B N (1975). Detection of carcinogens as mutagens in the

Salmonella/microsome test: Assay of 300 chemicals. *Proceedings of the National Academy of Science, USA*, 72, 5135-5139.

<sup>4</sup>Keay, L (1975). Introduction to 'Symposium on animal cell culture and its applications'. *Biotechnology and Bioengineering*, 17, 625-627.

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### Speciesism

Dr Lane-Petter and I have been matched on television as deadly antagonists. So, when I was invited to comment on his paper 'The ethics of animal experimentation', I raised my mightier-than-the-sword pen and poised it ready for the attack. But either I am becoming dangerously conservative, or else Dr Lane-Petter is more than I took him for.

In a sincere and constructive paper Dr Lane-Petter treats a serious subject seriously, ranging from the ethical and abstract through to the political and practical. He proposes a code of practice for experimenters who use live animals, a standing body to advise the Home Office (on its own initiative) and much greater public accountability. With all these three aims I agree. The stage now seems to be set for a closer discussion of the details of such measures.

1) As far as the standing body is concerned, I would like to see the reconstituting of the existing Home Office Advisory Committee. This Committee is supposed to advise on the administration of the Cruelty to Animals Act 1876, but, as Lord Platt has revealed recently, it met only five times in the 11 years that he was a member of it. The Littlewood Committee points out that the Royal Commission's intention was that one of the Committee's functions was to 'reassure the public that proposals for undesirable or cruel experiments would be subject to critical scrutiny' (para 455).

Yet, last year, amid all the public outcry about smoking beagles, all the parliamentary motions and questions, and the raining of petition signatures upon Whitehall, the Committee met on just three occasions: this is not what I understand by 'reassuring the public', and it is pathetically inadequate when one bears in mind that at least 100 000 British experiments are performed on animals each week.

Surely, Dr Lane-Petter is right. What we need to handle an issue of this magnitude (numerically as well as ethically), is a standing body with a permanent secretariat. The committee itself should consist of about 24 members, half of whom should be scientists of the highest calibre, and include Medical Research Council representatives. The remainder of the committee should represent general lay opinion together with that of animal welfare experts. The committee should be able to scrutinize all applications for licences and advise the Secretary

of State as to their desirability. Regular contact must be ensured with the Home Office inspectorate, scientific organizations, the general public and Parliament.

2) Public accountability is a great democratic principle. Surely this must entail, in practice, an opening up of channels of communication. Not only is much research using animals justified as being 'for the public good', it is also being paid for with the taxpayer's money. There is a mood in the country for 'no taxation without information', and it is a healthy mood, which may not only encourage better housekeeping but also greater equity. Has science any right to remain a 'sovereign state' within society?

The present Home Office annual returns under the 1876 Act give insufficient detail as to how exactly animals are being treated in the 5½ million licensed experiments each year. Categories should show how many are subjected to the various major types of procedure, such as LD<sub>50</sub> toxicity testing. There should also be an analysis of the purposes for which animals are being used. Last year, 66 per cent of all licensed research was for commercial undertakings but this figure did not appear in the returns. The figures should be broken down to show how many animals, and of what species, were used in the testing of cosmetics, toiletries, riot control and defence devices, pesticides, detergents, food additives, herbicides, industrial chemicals, behavioural experiments and medical research.

It would also be interesting to know the qualifications of experimenters: how many are students, how many technicians, how many (or rather, how few) are medically qualified.

Such information should be in addition to what little is traditionally published. We should, as Dr Lane-Petter puts it, ensure 'that the whole of society, not just the scientific world, be sufficiently informed and aware of what is being done, so that they can make judgments in accordance with currently accepted norms. The scientist has a duty to see that society is so informed, and to take account of society's judgments'. I wholeheartedly agree with that.

However, I find myself very much less pessimistic than Dr Lane-Petter concerning the future of humane techniques which are or could become alternative to the use of animals. At a conference in Brighton recently I heard Professor Kenneth Rees of University College Hospital Medical School, London, suggesting the widespread applicability of tissue-culture methods. In Toronto a few months ago, Professor S Fedoroff of Saskatchewan told a conference that he believed the limits to the uses to which tissue and organ cultures could be put were defined only by the limitations of the imagination of scientists. Surely, what we need is a much more determined and organized attempt by government to develop such humane methods. I would

suggest that such research should be coordinated by a central office which can then disseminate the information to scientists as it becomes available, and I would propose that a scientific subcommittee of the reconstituted Home Office Advisory Committee would be one possible body for this task.

Another task for the new advisory committee, and quite a central one, would be deciding on the justification for research, more or less on a case-by-case basis. Is this experiment likely to lead to information which will really relieve suffering or prolong life? This is a fundamental question. Currently, whatever one's criteria, the majority of experiments on animals can no longer be considered to be for strictly medical purposes. Dr Lane-Petter is right when he says it is not always easy to distinguish between 'medical' and 'non-medical' research, but difficulties of this sort do not let us off the hook morally. Difficult definitions are the stuff, not only of science itself, but of law also; and this is another reason why a full-time body is needed to make such judgments on a day-to-day basis.

I believe that animals have rights and interests just as we do. We are all part of God's creation and we are all evolutionary cousins. The evidence that other species can suffer is often as strong as the evidence that another person suffers. Under these circumstances, I can see no logical justification for a continued 'speciesist' prejudice against the non-human species in science or elsewhere.

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### Licensed torture?

Where so much is given, it may seem churlish to ask for more. Dr Lane-Petter concedes much that practical 'anti-vivisectionists' have demanded, particularly the need for a reconstituted Home Office advisory committee with real powers. Granted that he appears to think that the chief evil of animal experimentation lies in the distress it causes to human beings; granted that he exaggerates the difficulty of discriminating between medical and non-medical use (the production of a cosmetic is not of medical importance and neither, under the circumstances, is its testing) and ignores the problems of species difference that may vitiate *in-vivo* tests; granted that he displays some naïveté in alleging that those who deal with animals come to 'respect' them; it is notorious, on the contrary, that those whose profession it is to use creatures come to regard them simply as objects for use, 'animal preparations'<sup>1</sup>. But such failings can be viewed with sympathy as part of a consciously low-profile strategy for encouraging reform. Dr Lane-Petter's paper is a refreshing change from the bigotry and self conceit that have marred too many experimentalists' effusions. But Dr Lane-Petter, like



other liberals in other contexts, still evades the basic issue. It may be that great gains have been made for us by our use of 'animals'. It may be that these gains sometimes outweigh, upon a proper utilitarian calculation, the costs to those 'animals' but in many cases they plainly do not. It may even be that those or similar gains could not have been achieved in any other way, although in the production of cosmetics or medicaments for the minor ills of man there are certainly other and innocent sources, for example, herbs. But the question remains, would we, upon similar grounds, license the torture of members of our own species? Doubtless some of us sometimes would, though an absolute ban on torture is defensible even on utilitarian grounds, lest it come to seem a normal tool of policy. But few of us would seriously advocate a flourishing industry of baby breeders, baby users, even to obtain the undeniable gains for the rest of us that such experimentation upon *human* subjects would bring. And if it is wrong so to employ babies, imbeciles, members of another race or culture, why is it not wrong so to employ creatures of another species? Because their sufferings are less? Perhaps, sometimes, they are, but there can be no plausible principle which says that a baboon, for example, always suffers less than a human baby, whatever is done to it. Or because they cannot come to any agreement with us and so stand beyond all rules of justice? But neither can babies nor the mentally retarded, save by the un verbalized concessions and communications that our fellow mammals, at least, can also manage. Or is it simply that our loyalties lie only with our own species? Would we think highly of one hominid species that so oppressed its brother hominids? Do we think highly of those who let their race loyalty or their patriotism persuade them to such acts of violence?

It is not, after all, the 'anti-speciesist'<sup>3</sup>, the 'animal liberationist'<sup>3</sup>, the radical zoophile<sup>4</sup> who 'attributes a mystical persona' to animals. We simply say that if it is wrong to cause avoidable distress then it is wrong to torture, enslave and kill creatures not of our species for our own, frequently trivial, profit. There may be some occasions when it is proper to cause a lesser ill to prevent a greater, although few of us would chop up one living man in order to provide six with healthy organs and so save their lives. But the imperative to do good is generally thought secondary to the imperative to do no evil: we should not harm one creature to benefit another, unless the second has an overwhelmingly stronger claim to an injury-free life than the first. And on what metaphysical pretensions can human beings claim such universal priority over chimpanzees, cats, rats and cows?

A full acceptance of anti-speciesist principles will require a radical alteration of our relations with the

non-human: factory (and other) farmers, pet breeders, fur trappers and a good many zoo keepers will have to find other employment. Some genuinely medical advantages, as well as the enormously many trivia, must be foregone although perhaps a reform of our singularly unwholesome diet may bring some medical gains. Shelley's\* distant day when 'man has lost his terrible prerogative, and stands an equal amid equals', content to recognize himself as a primate, a mammal, a vertebrate, an animal with certain gifts and many responsibilities, that day will not dawn without economic trouble and many moral questionings. But if and when it comes, Dr Lane-Petter's paper will seem one more example of that 'oppressive liberalism' which seeks to make evils palatable, and not to remove them.

Compromise and gradual progress are of course the stuff of politics, but Dr Lane-Petter should be in no doubt that to the radical his 'liberalism' is in the end as suspect as, and much less coherent than, the aggressive idiocies of those who deny 'animals' all consideration. Consider a parallel as stated by Wasserstrom<sup>5</sup>: 'The white southerner will say that he simply cannot understand the Negro's dissatisfaction with his lot. This is because he, the white southerner, has always treated his Negroes very well. With appreciable sincerity, he will assert that he has real affection for many Negroes. He would never needlessly [!] inflict pain or suffering upon them. . . . Now of course this description of the facts is seldom accurate at all . . .'.

Where human rights are argued to hold because of man's capacity for pain, as they are by Wasserstrom, it is grossly inconsistent to deny them to our fellow creatures. Any argument which denies such rights to chimpanzees, cows, rats and the rest will also deny them to babies, imbeciles, lunatics and the aphasic. None of these can make their wishes or their troubles verbally explicit, but they can find spokesmen. So also can 'animals'. It will be time enough for Dr Lane-Petter to deprecate the excesses, the undue sensitivity of the radical zoophile, when he has understood and answered his arguments.

\**Queen Mab*, 8, 216f.

## References

- <sup>1</sup>Devereux, G (1967). *From Anxiety to Method in the Behavioural Sciences*, p. 234f. Mouton: The Hague.
- <sup>2</sup>Ryder, R (1975). *Victims of Science*. Davis-Poynter: London.
- <sup>3</sup>Singer, P (1975). *Animal Liberation*. Random House: New York.
- <sup>4</sup>Clark, S R L (1977). *The Moral Status of Animals* (in press). Clarendon Press: Oxford.
- <sup>5</sup>Wasserstrom, R (1975). In *Moral Problems*. Ed J Rachels. Harper: New York.